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of the State perhaps excepted) never do things by halves, we shall hopefully expect to see the other half of this, namely, volume second.

BOTANICAL PAPERS IN RECENT PERIODICALS. — *Comptes rendus*, 82, No. 20. Corenwinder, Chemical Researches respecting Vegetation. (The office of leaves. Fixation of carbon.) No. 21. L. Chailletet, On the Nature of the Mineral Substances assimilated by Fungi. No. 23. Pasteur, On the Origin of Organized Ferments. A. de Candolle, Influence of the Age of a Tree on the Mean Time of Leaf-Bud Expansion. Boiteau, On the Galls occurring on the Leaves of French Grape-Vines. No. 25. Maupas, On Contractile Vacuoles in the Vegetable Kingdom. No. 26. Hartsen, Researches respecting *Cupressus pyramidalis*. Bontin, Note on the Origin of the Nitrates in *Amarantus Blitum*. 83, No. 1. Trécul, The Carpellary Theory illustrated by Amaryllidaceæ. Nylander, The Lichens of Campbell Island. No. 2. Trécul's paper on the carpellary theory continued. Durin, On Cellulosic Fermentation of Cane-Sugar.

Flora, No. 18. Sachs, On Emulsion Figures and the Arrangement of Swarmspores in Water. W. Nylander, Lichens collected by Labalestier in Egypt. Dr. Suerssen, Notices of Vascular Cryptogams collected by Wawza. No. 19. Dr. B. Frank, The Biological Relations of the Thallus of some Crustaceous Lichens. No. 20. Nylander, Additions to European Lichenography. Dr. Prantl, Morphological Studies. De Krempelhuber, Brazilian Lichens. No. 21. J. E. Weiss, Relations of Growth and the Course of Fibrovascular Bundles of Piperaceæ. J. Reinke, Note respecting Recent Account of Apparatus for Demonstrating Growth.

Botanische Zeitung, Nos. 25, 26, 27, 28. Dr. Ernst Reuther, Contributions to the History of the Development of Flowers. No. 29. Solms-Laubach, The Development of the Flowers of *Brugmansia Zippelii* and *Aristolochia Clematidis* L. (continued in the four succeeding numbers of the journal). No. 33. A. W. Eichler, Reply to Reuther's paper mentioned above. No. 34. Professor Schenk, On the Fruit of Fossil Equisetaceæ. Professor Famintzin, On the Formation of Cotyledons.

ZOÖLOGY.

GEOGRAPHICAL VARIATION AMONG NORTH AMERICAN MAMMALS, ESPECIALLY IN RESPECT TO SIZE. — Having recently had an opportunity (through the kindness of Professor Baird) of studying with some care the magnificent series of skulls of the North American *Mammalia* belonging to the National Museum (amounting often to eighty or a hundred specimens of a single species), I have been strongly impressed with the different degrees of variability exhibited by the representatives of the species and genera of even the same family. The variation in size, for instance, with latitude, in the wolves and foxes is surprisingly great, amounting in some species (as will be shown later) to twenty-five per cent. of the average size of the species, while in other species of the *Feræ*

it is almost *nil*. Contrary to the general supposition, the variation in size among representatives of the same species is not always a decrease with the decrease of the latitude of the locality, but is in some cases exactly the reverse, in some species there being a very considerable and indisputable increase southward. This, for instance, is very markedly true of some species of *Felis* and in *Procyon lotor*. Consequently, the very generally received impression that in North America the species of *Mammalia* diminish in size southward, or with the decrease in the latitude (and altitude) of the locality, requires modification. While such is generally the case, the reverse of this too often occurs, with occasional instances also of a total absence of variation in size with locality, to be considered as forming "the exceptions" necessary to "prove the rule."

That there are such exceptions, among both birds and mammals, I have been long aware, and long since noticed that where there is an actual increase in size to the southward it occurs in species that belong to families or genera that are mainly developed within the tropics, there reaching their maximum development, both in respect to the number of their specific representatives and in respect to the size to which some of the species attain. This fact seems also to have been observed by others.¹

Most of the mammals of North America belong to families, subfamilies, or genera which have their greatest development in the temperate or colder portions of the northern hemisphere, as the *Cervidæ*, the *Canidæ*, the *Mustelidæ*, the *Sciuridæ* (especially the subfamily *Arctomyinæ*), the *Leporidaæ*, the *Castoridæ*, the *Arvicolinæ* among the *Muridæ*, the *Saccomyidæ*, *Geomyidæ*, etc. These rarely present an exception to the general law of decrease in size southward, though the variation is less (in fact, occasionally almost *nil*) in some species than in the others. The more marked exceptions, or those in which there is an actual increase in size southward, occur in those families that reach their highest development within the tropics, as the *Felidæ* and *Procyonidæ*.

In some species (as I have elsewhere noticed) there probably exists a double decadence in size, the individual reaching its maximum dimensions where the conditions of environment are most favorable for the existence of the species, and diminishing in size toward the northern (through scarcity of food and severity of climate) as well as toward the southern (in consequence of the enervating influence of tropical or semitropical conditions) limit of its distribution.

¹ I find that Mr. Robert Ridgway, some two years since, thus referred to this point. In alluding to the smaller size of Mexican specimens of *Catherpes Mexicanus* as compared with specimens from Colorado (*C. Mexicanus* var. *conspersus*), he says, "As we find this peculiarity exactly paralleled in the *Thryothorus ludovicianus* of the Atlantic States, may not these facts point out a law to the effect that in genera and species in the temperate zone the increase in size with latitude is toward the region of the highest development of the group?" (Baird, Brewer, and Ridgway's *Birds of North America*, vol. iii., App., p. 503, 1874.)

In a general way, the correlation of size with geographical distribution may be formulated in the following propositions :—

(1.) *The maximum physical development of the individual is attained where the conditions of environment are most favorable to the life of the species.* Species being primarily limited in their distribution by climatic conditions, their representatives living at or near either of their respective latitudinal boundaries are more or less unfavorably affected by the influences that finally limit the range of the species. These influences may be the direct effects of too high or too low a temperature, too little or too much humidity, or their indirect effects acting upon the plants or other sources of food. Hence the size of the individual generally correlates with the abundance or scarcity of food. Different species being constitutionally fitted for different climatic conditions, surroundings favorable to one may be very unfavorable to others, even of the same family or genus. Hence

(2.) *The largest species of a group (genus, subfamily, or family, as the case may be) are found where the group to which they severally belong reaches its highest development, or where it has what may be termed its centre of distribution.* In other words, species of a given group attain their maximum size where the conditions of existence for the group in question are the most favorable, just as the largest representatives of a species are found where the conditions are most favorable for the existence of the species.

(3.) *The most "typical" or most generalized representatives of a group are found also near its centre of distribution, outlying forms being generally more or less "aberrant" or specialized.* — J. A. ALLEN, Bulletin U. S. Geological Survey of the Territories.

A GORILLA IN ENGLAND. — Mr. Moore, Curator of the Free Public Museum at Liverpool, sends the following letter to *The London Times* of June 23d :—

"SIR, — A veritable young living gorilla was yesterday brought into Liverpool by the German African Society's Expedition, which arrived by the steamship *Loanda*, from the West Coast. The animal is a young male, in the most perfect health and condition, and measures nearly three feet in height. Its beetling brows, flattened, podgy nose, black muzzle, small ears, and thick fingers, cleft only to the second joint, distinguish it unmistakably from the chimpanzee. Only one other specimen has been brought alive to England. In the winter of 1855–56 a young female gorilla, of much smaller size, was exhibited by the late Mrs. Wombwell in Liverpool and other places. It died in March, 1856, and was sent to Mr. Waterton, of Walton Hall, who preserved the skin for his own collection, and sent the skeleton to the Leeds Museum. This specimen I saw living in Liverpool and dead at Walton Hall. All subsequent attempts to import the gorilla alive have failed; and, unfortunately, the British public will have no opportunity of profiting by the present suc-

cess, as the members of the expedition, with commendable patriotism, are taking the animal, on Saturday, *via* Hull to Berlin. Could it have graced our own Zoölogical Gardens it would have been the lion of the day; for, in addition to the great scientific interest of the species, the abounding life, energy, and joyous spirits of this example would have made it a universal favorite. Courteously received at Eberle's Alexandra Hotel by the members of the expedition, I found the creature romping and rolling in full liberty about the private drawing-room, now looking out of the window with all becoming gravity and sedateness as though interested, but not disconcerted, by the busy multitude and novelty without; then bounding rapidly along on knuckles and feet to examine and poke fun at some new-comer; playfully mumbling at his calves, pulling at his beard (a special delight), clinging to his arms, examining his hat (not at all to its improvement), curiously inquisitive as to his umbrella, and so on with visitor after visitor. If he becomes overexcited by the fun, a gentle box on the ear will bring him to order like a child, — like a child, only to be on the romp again immediately. He points with the index finger, claps with his hands, pouts out his tongue, feeds on a mixed diet, decidedly prefers roast meats to boiled, eats strawberries, as I saw, with delicate appreciativeness, is exquisitely clean and mannerly. The palms of his hands and feet are beautifully plump, soft, and black as jet. He has been eight months and a half in the possession of the expedition, has grown some six inches in that time, and is supposed to be between two and three years of age."

EGG OF CHIONIS. — In the final article of Bulletin No. 3 of the National Museum, upon *Chionis minor*, by Dr. Coues and myself, appears (page 89) the following paragraph: —

"An egg of *C. minor* was received by the Zoölogical Society, January 17, 1871, concerning which Prof. Alfred Newton said, 'No egg of either species of this genus had before been known, and this confirms, by its appearance, the systematic position of the form shown by osteology, its affinity, namely, to the plovers.'"

Since on the preceding page there is cited from the *Ibis* a mention of a letter from Mr. Layard, dated at Cape Town in 1867, wherein an egg of this bird had been described, the impression is naturally conveyed that Professor Newton had overlooked this previous description. Such an impression was held by us at the time of writing, and a passing mention thereof was furthermore made by me in an article upon the same subject, which appeared in the *Popular Science Monthly* for March last.

I have since learned that Mr. Layard was misinformed with regard to the authenticity of his specimen, brought him by a whaling captain, and that it proved not to belong to *Chionis* at all.

A considerable injustice has therefore been unwittingly done Professor Newton, which I beg that you will allow me the opportunity for repairing by giving publicity to this note. — J. H. KIDDER, Surgeon U. S. Navy.